IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:	Confirmation No.: 1340
BAGGETT *et al.*	Art Unit: 3628
Appl. No.: 09/667,235	Examiner: Dixon, Thomas A.
Filed: September 22, 2000	Atty. Docket: 1956.0010000
For: **Method, System, and Computer Program Product for Interfacing with Information Sources**	

Amended Brief on Appeal under 37 C.F.R. § 41.37(d)

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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is taken from a Non-Final Office Action, dated April 12, 2007. Unless otherwise indicated in this Appeal Brief, references to "the Office Action," refer to the Non-Final Office Action of April 12, 2007.

A Notice of Appeal from the rejection of claims 1-9, 14-16, 22-27, 37, 42-53, 55, 57-60, 62-64, 140, 150, 151, 165, 167-169, and 171, and from the objection to claims 6, 10-13, 17-21, 28-36, 38-42, 54-56, 61, and 62, in U.S. Patent Application Serial Number 09/667,235 (hereinafter, the "′235 application"), was filed on August 22, 2007. An Appeal Brief was filed on October 22, 2007.

This Amended Appeal Brief is filed in response to a Notification of Non-Compliant Appeal Brief, dated October 31, 2007. In response to the Notification, Appendices have been added for "Evidence" and "Related Proceedings," and the Table of Contents has been correspondingly revised. No other changes have been made.

The Commissioner is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 504259.

Table of Contents

I. Real Party in Interest

The real party in interest in this appeal is ITA Software, Inc., having an office at 141 Portland Street, 7th Floor, Cambridge, MA 02139.

An assignment conveying all right, title, and interest in the ′235 application, from the inventors to ITA Software, Inc., was recorded in the U.S. Patent and Trademark Office ("USPTO"), on January 10, 2001, at Reel 011431, Frame 0779.

II. Related Appeals and Interferences

Applicants, Appellants, and the undersigned legal representative of Appellant, are not aware of any prior or pending appeals, interferences, or judicial proceedings, which may be related to, directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1-64 and 140-171 are pending in the ′235 application. Claims 65-139 are cancelled.

Claims 1, 63, 64, 140, 141, 145-148, 150-156, 161, 162, 166, 167, 169, 170, and 171 are independent claims.[1]

Claims 141-149, 152-164, 166, and 170 are allowed.

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[1] Independent claims 140, 141, 145-148, 150-156, 161, 162, 166, 167, 169, 170, and 171 were added by amendment on September 28, 2006, in response to the Examiner's finding of allowable subject matter in various dependent claims (Final Office Action, dated July 14, 2005, page 11, paragraph 8), as discussed below.

Claims 1-9, 14-16, 22-27, 37, 42[2]-53, 55, 57-60, 62-64, 140, 150, 151, 165, 167-169, and 171 stand rejected.

Claims 6, 10-13, 17-21, 28-36, 38-42, 54-56, 61, and 62 are objected to.[3]

All of the objections and rejections of claims 1-64, 140, 150, 151, 165, 167-169, and 171 are appealed herein.

IV. Status of Amendments

No amendments have been filed subsequent to the Non-Final Office Action dated April 12, 2007, from which this Appeal has been taken. There are thus no outstanding non-entered amendments.

V. Summary of Claimed Subject Matter

Independent claims 1, 63, 140, 150, 151, 167, 169, and 171 are directed to methods of interfacing between one or more requestors of information, and information sources. Independent claim 64 is directed to a computer program product that enables a computer system to interface between one or more requestors of information, and information sources.

Independent claims 1, 140, 150, 151, 167, 169, and 171 are further directed to airline availability information.

The independent claims generally recite, among other features, determining to provide the requestors with at least one of real-time airline availability information and

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[2] Claim 42 is not listed as rejected on the Office Action Summary dated April 12, 2007. Claim 42 is, however, rejected on page 2 of the corresponding Office Action.

[3] Claims 6, 42, 54, 55, and 62 are not listed as objected to in the Office Action Summary dated April 12, 2007. They are, however, objected to on page 3 of the corresponding Office Action.

previously-cached airline availability information, and with respect to claim 169, predicted availability information.

None of the claims involved in this appeal recite means-plus-function or step-plus-function language.

A concise explanation of the subject matter recited in each of the independent claims involved in this appeal is provided below, including references to the specification by page and line number, and to the drawing(s), if any, by reference character.

1. Independent Claim 1

Independent claim 1 is reproduced below in a claim chart, with citations to exemplary written description support in the specification.

Claim 1	Exemplary Specification Support
A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:	Page 6, line 29, through page 7, line 12.
querying one or more airline availability information sources for airline availability information;	Page 10, lines 4-5; and FIG. 1, step 104.
receiving the requested airline availability information from the one or more airline availability information sources;	Page 56, lines 20-21; and FIG. 12C, step 1214.
caching the received airline availability information;	Page 22, line 26, to page 23, line 11; Page 57, lines 20-23; and FIG. 12C, step 1216.
receiving queries from requestors for airline availability information;	Page 10, lines 2-3; FIG. 1, step 102; Page 54, lines 18-19; and FIG. 12B, step 102.
prioritizing the requestor queries;	Page 3, lines 15-16; Page 7, lines 19-22; Page 10, line 12; and Page 18, line 23, to page 22, line 2.
Processing the requestor queries in accordance with the associated priorities;	Page 10, lines 4-7, and 12; FIG. 1, step 104; Page 55, lines 1-2; and FIG. 12C, step 1206.
determining to provide the requestors with at least one of real-time airline availability information and cached airline availability information based at least in part on one or more factors associated with one or more of the requestors, the requestor queries, the requested airline availability information, and the airline availability information sources; and	Page 8, lines 23-27; Page 10, lines 13-15; Page 23, line 24, through page 25, line 3; Page 55, line 8, through page 56, line 18; FIG. 12C, step 1208; and FIG. 13B, step 1306.
providing information to the requestors in accordance with the determining.	Page 10, lines 25-26; FIG 1, step 106; Page 58, line 10; and FIG. 12C, step 1226.

2. Independent Claim 63

Claim 63 is similar to method claim 1, but recites "information" rather than "airline availability information." Support for the broader scope of claim 63 is found at, for example, page 6, line 29, to page 7, line 12.

3. Independent Claim 64

Claim 64 is a computer program product claim, similar to claim 1, but recites "information" rather than "airline availability information," as in claim 63.

4. Independent Claim 140

Independent claim 140 is based on original claim 6. Claim 140 was added by amendment (filed September 28, 2006), in response to the Examiner's indication that claim 6 would be allowable if rewritten to overcome a rejection under 35 U.S.C. 101. (Final Office Action dated July 14, 2005, page 11, paragraph 8).

Claim 140 includes the steps of querying, receiving the requested information, caching, and receiving queries, as recited in claim 1. Claim 140 further recites prioritizing sub-queries and proactively generating queries, as shown in the partial claim chart of claim 140 below, which includes citations to exemplary written description support in the specification.

Claim 140	Exemplary Specification Support
separating a first requestor query into one or more sub-queries;	Page 20, lines 7-8; FIG. 4A, step 402; FIG. 5; Page 54, lines 20-23; and FIG. 12B, step 1202.
prioritizing the one or more first requestor sub-queries with respect to one another;	Page 20, lines 8-9; FIG. 4A, step 404; and FIG. 5.
placing the one or more first requestor sub-queries in a query priority queue;	Page 20, lines 21-22; FIG. 4A, step 406; Page 21, lines 9-10; and FIGS. 7 and 8.

Claim 140	Exemplary Specification Support
separating a second requestor query into one or more sub-queries;	Page 21, lines 6-8; FIG. 4A, step 408; and FIG. 6.
prioritizing the one or more second requestor sub-queries with respect to one another;	Page 21, lines 6-8; FIG. 4A, step 410; and FIG. 6.
placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors;	Page 21, lines 9-21; FIG. 4A, step 412; FIG. 4B, step 412; FIG. 4D, step 412; FIG. 7; and FIG. 8.
proactively generating one or more queries independent of the requestor queries;	Page 3, lines 4-5; Page 8, lines 28-30; and Page 11, lines 25-30.
adding the proactively generated queries to the query priority queue at lower priorities than the requestor queries;	Page 12, lines 9-12; Page 21, line 28, to page 22, line 3; FIGS. 7 and 8; and Page 36, lines 8-15.
processing the requestor queries and the proactively generated queries according to their priorities;	FIG. 4A, step 414; Page 55, lines 1-2; and FIG. 12C, step 1206.
determining to provide the requestors with at least one of the following types of airline availability information, real-time information, and cached information;	Page 8, lines 23-25; Page 10, lines 13-15; Page 23, line 24, through page 25, line 3; Page 55, line 8, through page 56, line 18; FIG. 12C, step 1208; and FIG. 13B, step 1306.
providing information to the requestors in accordance with the determining; and	Page 10, lines 25-26; FIG 1, step 106; Page 58, line 10; and FIG. 12C, step 1226.
sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.	Page 3, lines 4-5; Page 8, lines 28-30; Page 11, lines 25-30; Page 55, lines 10-12; Page 57, lines 20-23; and FIG. 12C, steps 1214 and 1216.

5. Independent Claim 150

Independent claim 150 is based on original claim 23. Claim 150 was added by amendment (filed September 28, 2006), in response to the Examiner's indication that claim 23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101. (Final Office Action dated July 14, 2005, page 11, paragraph 8).

Claim 150 includes the steps of querying, receiving the requested information, caching, and receiving queries, as recited in claim 1. Claim 150 further recites features related to permitting at least one of the requestors to select an option for returning requested information, as shown in the partial claim chart below, which includes citations to exemplary written description support in the specification.

Claim 150	Exemplary Specification Support
permitting at least one of the requestors to select one of the following options, return real-time information only, return cached information only, return cached information if available, otherwise consult a real-time information source, and return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source;	Page 8, lines 25-27; Page 24, lines 6-21;
determining to provide the requestors with at least one of the following types of airline availability information based at least in part on a requestor selected option, real-time information, and cached information; and	Page 55, lines 8-9 and 13-18; FIG. 12C, step 1208; Page 56, line 26 to page 57, line 3; FIG. 13B, step 1306.
providing information to the requestors in accordance with the determining.	Page 10, lines 25-26; FIG 1, step 106; Page 58, line 10; and FIG. 12C, step 1226.

6. Independent Claim 151

Independent claim 151 is based on original claim 24. Claim 151 was added by amendment (filed September 28, 2006), in response to the Examiner's indication that claim 24 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 101. (Final Office Action dated July 14, 2005, page 11, paragraph 8).

Claim 151 is similar to claim 150, but recites features related to permitting at least one of the requestors to ***select and prioritize a plurality of options*** for returning requested information, as shown in the partial claim chart below, which includes citations to exemplary written description support in the specification.

Claim 151	Exemplary Specification Support
permitting at least one of the requestors to **select and prioritize a plurality** of the following options, return real-time information only, return cached information only, return cached information if available, otherwise consult a real-time information source, and return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source;	Original claim 24; Page 8, lines 25-27; and Page 24, lines 6-21.
determining to provide the requestors with at least one of the following types of airline availability information **based at least in part on requestor selected options and prioritizations**, real-time information, and cached information; and	Original claim 24; Page 55, lines 8-9 and 13-18; FIG. 12C, step 1208; Page 56, line 26 to page 57, line 3; FIG. 13B, step 1306.
providing information to the requestors in accordance with the determining.	Page 10, lines 25-26; FIG 1, step 106; Page 58, line 10; and FIG. 12C, step 1226.

7. Independent Claim 167

Independent claim 167 is based on original claim 55. Claim 167 was added by amendment (filed September 28, 2006).

Claim 167 includes the steps of querying, receiving the requested information, caching, and receiving queries, as in claim 1. Claim 167 further recites proactively generating one or more queries to update cached airline availability information according to multiple priorities, as shown in the partial claim chart below, which includes citations to exemplary written description support in the specification.

Claim 167	Exemplary Specification Support
proactively generating one or more queries independent of requestor queries, including proactively generating one or more queries to update cached airline availability information according to multiple priorities; and	Original claim 55; Page 3, lines 4-5; Page 8, lines 28-30; Page 11, line 25, to page 12, line 5; Page 36, lines 8-9; Page 37, lines 7, through page 38, line 11. Page 54, lines 26-27; and FIG. 12B, step 1250;
sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.	Page 3, lines 4-5; Page 8, lines 28-30; Page 11, lines 25-30; Page 55, lines 10-12; Page 57, lines 20-23; and FIG. 12C, steps 1214 and 1216.

8. Independent Claim 169

Independent claim 169 is based on original claim 60. Claim 169 was added by amendment (filed September 28, 2006), in response to the Examiner's indication that claim 60 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 101. (Final Office Action dated July 14, 2005, page 11, paragraph 8).

Claim 169 includes the steps of querying, receiving the requested information, caching, and receiving queries, as in claim 1. Claim 169 further recites predicting an availability status, as shown in the partial claim chart below, which includes citations to exemplary written description support in the specification.

Predicting availability status is disclosed at, for example:

page 23, lines 17-21;

page 43, lines 26-29;

page 44, line 24, to page 45, line 6; and original claim 60.

Claim 169	Exemplary Specification Support
predicting an availability status based on prior observed variables, including prior availability information, wherein the predicting includes,	Original claim 60.
identifying one or more factors associated with availability status,	Original claim 60.
learning a relationship between historical values for the one or more factors and historical values for availability status,	Original claim 60.
generating a function according to the learned relationship, and	Original claim 60.
providing new values for the one or more factors to the function, whereby the function outputs predicted values for availability status;	Original claim 60.
determining to provide the requestors with at least one of the following types of airline availability information, real-time information, cached information, and predicted information; and	Original claim 60.
providing information to the requestors in accordance with the determining.	Original claim 60.

9. Independent Claim 171

Independent claim 171 is based on original claim 62. Claim 171 was added by amendment (filed September 28, 2006), in response to the Examiner's indication that claim 62 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 101. (Final Office Action dated July 14, 2005, page 11, paragraph 8).

Claim 171 is directed to monitoring airline availability information traffic, as shown in the claim chart below, which includes citations to exemplary written description support in the specification.

Claim 171	Exemplary Specification Support
A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:	Page 6, line 29, through page 7, line 12.
monitoring airline availability information traffic between an airline availability information source and one or more clients of the airline availability information source;	Page 23, lines 9-11; Page 59, lines 5-10; and FIG. 12B, step 1240.
caching at least a portion of the monitored airline availability information traffic;	Page 23, line 11; Page 59, lines 5-10; and FIG. 12B, step 1242.
determining a likelihood that information will be received within a period of time by the monitoring;	Original claim 62.
generating proactive queries for information not likely to be received within the period of time;	Page 3, lines 4-5; Page 8, lines 28-30; and Page 11, lines 25-30.
caching information returned in response to the proactive queries;	Page 3, lines 4-5; Page 8, lines 28-30; Page 11, lines 25-30; Page 55, lines 10-12; Page 57, lines 20-23; and FIG. 12C, steps 1214 and 1216.
receiving a queries from requestors for airline availability information;	Page 10, lines 2-3; FIG. 1, step 102; Page 54, lines 18-19; and FIG. 12B, step 102.

Claim 171	Exemplary Specification Support
determining to provide the requestors with at least one of the following types of airline availability information, real-time information, and cached information; and	Page 8, lines 23-25; Page 10, lines 13-15; Page 23, line 24, through page 25, line 3; Page 55, line 8, through page 56, line 18; FIG. 12C, step 1208; and FIG. 13B, step 1306.
providing information to the requestors in accordance with the determining.	Page 10, lines 25-26; FIG 1, step 106; Page 58, line 10; and FIG. 12C, step 1226.

VI. Grounds of Rejection to be Reviewed on Appeal

The following grounds of rejection and objection are sought to be reviewed on Appeal:

> Claims 23, 24, 42, 62, 150, 151, 165 and 171, are rejected under 35 U.S.C. § 112, ¶2 as being indefinite.
>
> Claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62 are objected to under 37 C.F.R. § 1.75, as being a substantial duplicate of claims 140-149, 152-167, 170-171.
>
> Claims 1-9, 14-16, 23-25, 37, 43-53, 55, 57-60, 63, 64, 140, and 167-169 are rejected under 35 U.S.C. § 102(e), as being anticipated by WO 00/46715 to DeMarcken (hereinafter, "DeMarcken").
>
> Claim 22 is rejected under 35 U.S.C. § 103(a), as being unpatentable over DeMarcken in view of U.S. Patent No. 5,832,454 to Jafri et al., (hereinafter "Jafri").
>
> Claims 26 and 27 are rejected under 35 U.S.C. § 103(a), as being unpatentable over DeMarcken in view of U.S. Patent No. 4,862,357 to Ahlstrom et al., (hereinafter "Ahlstrom").

VII. Argument

A. Rejections under 35 U.S.C. § 112

Claims 23, 24, 42, 62, 150, 151, 165 and 171, stand rejected under 35 U.S.C. § 112, ¶2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. (Office Action, page 2, paragraph 3).

Appellants appeal the rejection on the ground that that there is no ambiguity or indefiniteness in the meaning, scope, or breadth of any of claims 23, 24, 42, 62, 150, 151, 165 and 171.

1. Standards of Definiteness

"The requirement of claim definiteness set out in §112 ¶ 2 assures that claims in a patent are 'sufficiently precise to permit a potential competitor to determine whether or not he is infringing.'" *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1342, 65 USPQ2d 1385 (Fed. Cir. 2003), (citations omitted).

"The test for determining whether a claim meets the definiteness requirement is 'whether one skilled in the art would understand the bounds of the claim when read in light of the specification.'" *LNP Engineering Plastics, Inc., v. Miller Waste Mills, Inc.*, 275 F.3d 1347, 1359, 61 USPQ2d 1193 (Fed. Cir. 2001), (citations omitted).

2. Claims 23, 24, 150, and 151

Claims 23, 24, 150, and 151 recite, among other features:

> return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source.

Support for these features is found in the specification at, for example, page 24, lines 13-19. The phrase, "where N is a real number" was added by amendment in a prior attempt to overcome the rejection under 35 U.S.C. § 112.

In the Office Action, the Examiner asserts that:

> The metes and bounds of the claim cannot be determined because it is unclear how many seconds are in an "N".

(Office Action, page 2).

The language of claims 23, 24, 150, and 151 is unambiguous: cached information is to be returned in response to a query, provided that the cached information is not older than an age limit. If the cached information is older than the age limit, a real-time information source is consulted.

Claims 23, 24, 150, and 151 do not limit the time that cached information can be used. As long as an age limit is employed, the terms of the claims are met.

In *Exxon Research & Engineering Co. v. United States*, 265 F.3d 1371, 60 USPQ2d 1272 (Fed. Cir. 2001), the Federal Circuit held that open-ended ranges are not indefinite. In that case, two patents were at issue, a ′705 patent and a ′902 patent. Claim 1 of the ′705 patent required that a catalyst be treated for a "period sufficient to increase substantially the initial catalyst activity." (*Exxon* at 1374). The trial court had held that the claim was indefinite because, among other reasons, it imposed no upper or lower limit on the "period sufficient." (*Exxon* at 1378). The Federal Circuit agreed that the claim imposed no upper limit on the time period, (*Exxon* at 1378), but reversed the trial court's determination that this rendered the claim indefinite.

> While treatment of the catalyst for a much longer period might not be as effective as treatment for a period barely sufficient to achieve the prescribed increase in catalyst productivity, the fact that the invention may be inoperable with very long treatment periods does not make the claim language indefinite.

(*Exxon* at 1378).

With respect to the lower boundary, the court held that the specification provided sufficient guidance to determine a "period sufficient." (*Exxon* at 1379).

With respect to the ′982 patent, claim 1 recited, among other features, "particles of average diameter, d[p]> 5 [mu] m." (*Exxon* at 1374). The trial court held the claim to be indefinite because it did not recite an upper limit on particle size. (*Exxon* at 1382). The court reversed, holding that:

> The claims do not contain any limitation on maximum particle size, and *no limitation is required as a matter of definiteness*. Thus, the claims expressly reach any composition with catalyst particles having an average diameter greater than five microns, no matter how large the particles may be; as such, there is no indefiniteness as to the scope of that limitation.

(*Exxon* at 1382, emphasis added).

The court analogized that:

> A patent claim to a fishing pole would not be invalid on indefiniteness grounds if it contained a limitation requiring that the pole be "at least three feet long," even though a 50-foot-long fishing pole would not be very practical. By the same token, there is nothing indefinite about the claim language at issue in this case simply because it covers some embodiments that may be inoperable.

(*Exxon* at 1382).

By the same token, there is nothing indefinite about the claim language "return cached information if the cached information is less than N seconds old."

Moreover, the indefinite issues faced in *Exxon* and many other indefiniteness opinions arise from functional language, such as "sufficient to," which often requires some amount of experimentation to determine a useful or practical time or concentration. In the present case, there is no such functional language associated with the period of time N. Thus, no experimentation is needed to determine the scope of the claims.

It is respectfully submitted, therefore, that one skilled in the art would not find ambiguity or indefiniteness in the meaning, scope, or breadth of the phrase, "return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source," as recited in claims 23, 24, 150, and 151.

Reversal of the rejection of claims 23, 24, 150, and 151 is requested.

3. Claims 42 and 165

Claims 42 and 165 recite:

> wherein the filtering step includes filtering out queries related to flights that users are not expected to request.

Filtering of proactively generated queries is disclosed in the specification at, for example, page 36, line 27, to page 37, line 6. Filtering of queries related to flights that users are not expected request is disclosed in the specification at, for example, page 37, lines 5-6.

In the Office Action, the Examiner asserts that:

> The filtering out of queries related to flights that users are not expected to request is indefinite, it is unclear how this expectation is determined.

(Office Action, page 2).

Claims 42 and 165 do not recite *determining* the expectation, but rather, *filtering* based on the expectation. Claims 42 and 165 are not limited as to how or where the expectation is determined.

Absent relevant prior art, Applicant's are not required to limit claims 42 and 165 to any specific method for determining the expectation. (See, *Resonate Inc. v. Altean Websystems, Inc.*, 338 F.3d 1360, 1365, 67 USPQ2d 1771 (Fed. Cir. 2003), ("Patentees are not required to claim each part of an invention with the same amount of detail; indeed, such a rule likely would prove unworkable.")).

There is no evidence that is one skilled in the art would not understand the bounds of claims 42 and 165 when read in light of the specification. There is, therefore, no ambiguity or indefiniteness in the meaning, scope, or breadth of the phrase, "filtering out queries related to flights that users are not expected to request," as recited in claim 42 and claim 165.

Reversal of the rejection of claims 42 and 165 is requested.

4. Claims 62 and 171

Claims 62 and 171 recite, among other features:

> monitoring airline availability information traffic between an airline availability information source and one or more clients of the airline availability information source;
>
> determining a likelihood that information will be received within a period of time by the monitoring; and
>
> generating proactive queries for information not likely to be received within the period of time.

Claims 62 and 171 were amended during prosecution to recite "period of time" rather than "near future," in response to a prior indefiniteness rejection.

Monitoring of airline availability information traffic is disclosed in the specification at, for example:

> page 43, line 24;
>
> page 44, lines 8-13;
>
> page 59, lines 5-10, describing steps 1240 and 1242 in FIG. 12B, and
>
> page 60, line 20, through page 61, line 4, describing optional snooping module 1702 in FIG. 17.

The determining step is disclosed in the specification at, for example, original claim 62.

In the Office Action, the Examiner asserts that:

> The phrase "within a period of time" and "within the period of time" renders the claim indefinite, further it is unclear how this "likelihood" is determined.

(Office Action, page 3).

In accordance with *Exxon*, discussed above with respect to claims 23, 24, 150, and 151, there is no indefiniteness in the meaning, scope, or breadth of the phrase, "within a period of time," as recited in claims 62 and 171.

Regarding determination of the likelihood, based on the specification, one skilled in the relevant art(s) would understand, for example, that historical monitored availability traffic can be used to determine a likelihood that information will be received within a period of time by the monitoring. Claims 62 and 171 are not, however, limited to any particular method or criteria for determining a likelihood that information will be received within the period of time by the monitoring. Any method or criteria for determining the likelihood will suffice.

As noted above with respect to claims 42 and 165, absent relevant prior art, Applicants are not required to limit claims 62 and 171 to any specific method for determining the likelihood. (See, *Resonate Inc. v. Altean Websystems, Inc.*, 338 F.3d 1360, 1365, 67 USPQ2d 1771 (Fed. Cir. 2003), ("Patentees are not required to claim each part of an invention with the same amount of detail; indeed, such a rule likely would prove unworkable.")).

It is respectfully submitted, therefore, that one skilled in the art would not find ambiguity or indefiniteness in the meaning, scope, or breadth of the phrase, "determining a likelihood that information will be received within a period of time by the monitoring," as recited in claims 62 and 171.

Reversal of the rejection of claims 62 and 171 is requested.

5. Appellants' Response to the Examiner's Interpretation of Applicants' Prior Remarks

In paragraph 2 of the Office Action, the Examiner addressed Remarks that Applicants provided in response to a prior rejection under 35 U.S.C. § 112, ¶2 (see Remarks at page 50, third paragraph, through page 53, second paragraph, of the Amendment and Reply filed on February 5, 2007). The Examiner commented that:

> In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., clarifications from the specification as to the determination of the time related to N, the expectations or unlikeliness of user's requests) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

(Office Action, paragraph 2, citations omitted).

The Examiner's comments indicate a misunderstanding of the purpose of Applicants' prior Remarks. Applicants' prior Remarks were not provided in response to a prior art rejection, and thus were not intended to show "that the references fail to show certain features of applicant's invention," as suggested by the Examiner. Rather, Applicants' Remarks were provided in response to the prior rejection under 35 U.S.C. § 112, ¶2, to show that, in light of the specification, one skilled in the relevant art(s) would not find the claims indefinite.

B. Objections under 37 C.F.R. § 1.75

On page 3 of the Office Action, under the heading, "Double Patenting," claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62 were ostensibly objected to under 37 C.F.R. § 1.75, "as being a substantial duplicate of claims 140-149, 152-167, 170-171." According to the Office Action:

> When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

(Office Action, page 3).

Appellants appeal on the ground that claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62 are neither duplicates of 140-149, 152-167, 170-171, nor so close in content that they cover the same thing.

1. Board's Authority to Review Objections

Under 35 U.S.C. §6, the Board has authority to review "adverse decisions of the Examiner." The Board's review authority is, however, generally restricted to matters "which relate at least indirectly, to matters involving the rejection of claims." (*In re Hengehold*, 440 F.2d 1395, 58 CCPA 1099 (1971).

The Board's authority is not, however, strictly limited to actions labeled as "rejections" by the Examiner. In *In re Searles*, 422 F.2d 431 (CCPA, 1970), for example, the originally named inventor on a patent application filed an amendment to name a co-inventor in order avoid certain prior art. The Examiner refused to enter the amendment because of questionable facts surrounding inventorship, and rejected the claims over the prior art. The Board sustained the Examiner's denial of entry of the amendment and the rejection.

The court held that the Examiner's refusal to enter the amendment was appealable, not only because the Examiner's action was "determinative of the rejection," as determined by the Board and the Commissioner (*id.*, at 434), but also because it:

> additionally, and necessarily, required the exercise of technical skill and legal judgment in order to evaluate the facts presented, interpret the requirements of 35 U.S.C. § 116 and Rule 45 and weigh the facts against those requirements. His decision was, thus, such an "adverse decision" as to be properly reviewable by the Board of Appeals under 35 U.S.C. § 7.

(*id.* at 435).

In *In re Hass*, 486 F.2d 1053 (CCPA, 1973), the court overturned the Board's dismissal of an appeal for lack of jurisdiction. The appeal concerned an Examiner's withdrawal of claims from further consideration on the grounds that the claims included multiple distinct inventions.

According to the court:

> In considering the examiner's actions we look both to the language employed and the *effect* thereof. We consider form and substance.... The particular packaging employed cannot be determinative.

(id., at 1055, emphasis in original). The court concluded:

> We find that the action taken by the examiner did in fact amount to a rejection of claims 1 and 2. Those claims were withdrawn from consideration not only in this application but prospectively in any subsequent application because of their content. In effect there had been a denial of patentability of the claims.

(*id.*, at 1056).

It appears from the opinion that each of the withdrawn claims allegedly recited multiple inventions. "Presumably, only by dividing the subject matter into separate, and thus different, claims in plural applications could an examination of the patentability of

their subject matter be obtained." (*id.*, at 1056). The applicant's only recourse, therefore, other than appealing, would have been to amend or cancel the claims.

In the present application, the objection of paragraph 4 appears under the heading, "Double Patenting," and is preceded by two paragraphs that discuss double patenting *rejections*. Specifically:

> A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C 101 ….
>
> A statutory type (35 U.S.C 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C 101.

(Office Action, page 3, emphasis in original).

In form, therefore, the objection is introduced as a rejection.

In substance, as a result of the Examiner's action, the objected claims will not be further examined in this or a subsequent application. Applicant's only recourse, other than appealing to the Board, is to cancel or substantively amend the claims. The Examiner's action also "required the exercise of technical skill and legal judgment in order to evaluate the facts presented, interpret the requirements of [Rule 1.75] and weigh the facts against those requirements." (*In re Searles* at 435).

In both form and substance, therefore, the objection is indistinguishable from a rejection. Accordingly, the objection of claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62 is effectively a rejection of the claims and thus, reviewable on appeal.

2. Distinctions Between the Claims

Appellants appeal the rejection of claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62 on the ground that they are neither duplicates of claims 140-149, 152-167, 170-171, nor so close in content that they cover the same thing.

Claims 140-149, 152-167, and 170-171, were added by amendment on September 28, 2006, in response to a finding of allowable subject matter in various dependent claims (Final Office Action, dated July 14, 2005, page 11, paragraph 8). Applicants′ Amendment and Reply adding the new claims included the table below, which shows the correspondence between the new claims and then-pending claims. In the table, independent new claims are indicated by asterisks.

Appellants note that in the table submitted with the Amendment and Reply on September 28, 2006, claim 55 was mistakenly indicated as having been found allowable. This does not, however, affect this appeal.

Allowed Claim	Base Claim and any Intervening Claims	Corresponding New Claim
6	1, 3, 5	140*
10	1, 3, 9	141*
11	1, 3, 9, 10	142
12	1, 3, 9, 10, 12	143
13	1, 3, 9, 10, 12, 13	144
17	1, 16	145*
18	1, 16	146*
19	1, 16	147*
20	1, 16	148*
21	1, 16, 20	149
23	1, 14	150*
24	1, 14	151*
28	1	152*
29	1	153*
30	1	154*
31	1	155*

Allowed Claim	Base Claim and any Intervening Claims	Corresponding New Claim
32	1	156*
33	1, 32	157
34	1, 32	158
35	1, 32	159
36	1, 32	160
38	1, 3	161*
39	1, 3	162*
40	1, 3, 39	163
41	1, 3, 39	164
42	1, 3, 39	165
54	1, 3	166*
55	1, 3	167*
57	1, 3, 55	168
60	1, 58, 59	169
61	1	170
62	1	171

In the Amendment and Reply filed September 28, 2006, and in a subsequent Amendment filed February 5, 2007, Applicants amended claim 1 to further recite:

> prioritizing the requestor queries;
>
> processing the requestor queries in accordance with the associated priorities; and
>
> determining to provide the requestors with at least one of real-time airline availability information and cached airline availability information based at least in part on one or more factors associated with one or more of the requestors, the requestor queries, the requested airline availability information, and the airline availability information sources.

Claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62 depend, directly or indirectly from claim 1, and thus include the features above that were added to claim 1.

Claims 140-149, 152-167, 170, and171, on the other hand, do not recite the features above.

It is respectfully submitted that the features above render claims 6, 10-13, 17-21, 28-36, 38-42, 54, 55, 61, and 62, different from claims 140-149, 152-167, 170, and171, so that they are not duplicates of one another, nor so close in content that they cover the same thing.

Reversal of the rejection is requested.

C. Rejections under 35 U.S.C. § 102

In paragraph 5 of the Office Action, claims 1-9, 14-16, 23-25, 37, 43-53, 55, 57-60, 63, 64, 140, and 167-169 were rejected under 35 U.S.C. § 102(e), as being anticipated by WO 00/46715 to DeMarcken (hereinafter "DeMarcken").

Appellants appeal the rejection on the grounds that DeMarken does not teach or suggest all of the features recited in the rejected claims.

1. Claim 1

Claim 1 recites, among other features:

> prioritizing the requestor queries; and
>
> processing the requestor queries in accordance with the associated priorities.

The Office Action cites the following passages from DeMarcken as teaching prioritizing of requestor queries and processing of the requestor queries in accordance with the associated priorities:

> page 11, lines 4-7;
>
> page 17, lines 27-34;
>
> page 18, lines 24-30; and
>
> page 21, lines 2-11.

(Office Action, page 4). The cited passages are reproduced and distinguished below.

The first cited passage of DeMarcken reads:

> For example, the database 70 may be populated during off peak times for travel agents or may be simply populated with such routine queries when the system is not otherwise in use.

(DeMarcken, page 11, lines 4-7).

The above passage is preceded by the following:

> The database 70 can also be populated by routine direct queries even in the absence of queries made to the predictor so that, when a question is asked of the predictor, it is less likely that a direct query would have to be made.

(DeMarcken, page 10, line 36, to page 11, line 4).

The "routine direct queries" described above in DeMarcken are thus system-generated queries, not *requestor* queries. The passage does not address prioritization of *requestor* queries, as recited in claim 1.

The second cited passage of DeMarcken reads:

> In addition, although not present in *this query*, other factors could also be present in *a typical availability query*. For example, if the booking code was Y that would indicate a high cost fare. If the flight number is 7500, that could indicate a high flight number and if the origin and destination were "DLH-HIB" (Duluth to Hibbing), that could indicate a flight between two small cities.

(DeMarcken, page 17, lines 27-34, emphasis added).

The above passage is directed to parsing of information from an individual query by an availability predictor (DeMarcken, page 17, lines 20-22), and lists other features that could be included in a typical availability query. This passage does not address prioritization of requestor queries.

The third cited passage of DeMarcken reads:

> Referring now to FIG. 10A, one embodiment 65c′ of the model-based availability predictor 65c is shown. The predictor 65c′ determines 172 positive features of *the query*. The predictor 65c′ retrieves 174 weights for the positive features with the weights either set in accordance with expert understanding of airline's availability, or, automatically from historical data.

(DeMarcken, page 18, lines 24-30, emphasis added).

The above passage is directed to predicting availability in responding to an individual query. The passage does not address prioritization of requestor queries.

The fourth cited passage of DeMarcken reads:

> Referring now to FIG. 11, an alternative mechanism 65d for an availability predictor 65 includes an airline availability processing system simulator 192. As mentioned previously, generally airlines have an availability system 66 (FIG. 1) that depends upon various considerations as to whether or not an airline will indicate that a seat is available in response to *a given query*. The airline availability system implements an airline's complex selling policy in order to maximize profit on a given flight.

(DeMarcken, page 21, lines 2-11, emphasis added).

The above passage is directed to simulating an airline availability system. The passage does not address prioritization of requestor queries.

In summary, none of the above cited passages of DeMarcken, alone or in combination, teach or suggest, "prioritizing the requestor queries," and "processing the requestor queries in accordance with the associated priorities," as recited in claim 1.

Reversal of the rejection of claim 1 is requested.

2. Claims 2-9, 14-16, 23-25, 37, 43-53, 55, and 57-60

Claims 2-9, 14-16, 23-25, 37, 43-53, 55, and 57-60, depend, directly or indirectly from claim 1, and are thus patentable for at least the reasons provided above with respect to claim 1, and further in view of the additional features recited therein. Accordingly, reversal of the rejection of claims 2-9, 14-16, 23-25, 37, 43-53, 55, and 57-60 is requested.

Dependent claims 5, 6, 8, 9, 14, 16, 23, 24, 25, 43-53, 55, 57, 60, 63, 64, 140, 167, 168, and 169 are further distinguished from DeMarcken below.

3. Claim 5

Claim 5 depends from claim 3. Claim 3 recites:

> The method according to claim 1, further comprising:
>
> proactively generating one or more queries independent of requestor queries; and
>
> sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

Proactively generating queries is disclosed at, for example, page 35, line 7, through page 45, line 12, of the present specification. Proactive querying can be performed to populate a cache and/or to update previously cached information. (Specification, page 35, lines 15-23).

Claim 5 recites:

> adding the requestor queries to a query priority queue;
>
> adding proactively generated queries to the query priority queue, at lower priorities than the requestor queries; and
>
> processing the requestor queries and the proactively generated queries according to their priorities.

These features are disclosed at, for example, page 36, lines 8-15, of the present Specification.

The Examiner asserts that:

> As per claim 5.
>
> DeMarcken et al further discloses adding requestor queries and proactive queries to a query priority queue, proactive queries at a lower priority and processing the requestor queries and the proactively generated queries according to their priorities, see page 10, line 24 - page 11, line 7.

(Office Action, page 5).

Page 10, lines 24-35 of DeMarcken describes "additional information" (DeMarcken, page 10, line 24), that can be stored in a database along with a query. The

additional information can include information related to a query (i.e., "time and/or date query was stored, received, and/or generated," and "source of the query"), and characteristics of the traveler. (DeMarken, page 10, lines 24-35). This passage of DeMarcken does not address proactive queries, query priority queues, or prioritization of requestor queries and proactive queries, as recited in claim 5.

Page 10, line 36, through page 11, line 7 of DeMarcken provides:

> The database 70 can also be populated by routine direct queries even in the absence of queries made to the predictor so that, when a query is asked of the predictor, it is less likely that a direct query would have to be made. For example, the database 70 may be populated during off peak times for travel agents or may be simply populated with such routine queries when the system is not otherwise in use.

(DeMarcken, page 10, line 36, through page 11, line 7).

This passage of DeMarcken does not teach or suggest adding requestor queries and proactively generated queries to a query priority queue, placing the proactively generated at a lower priority than the requestor queries, and processing the requestor queries and the proactively generated queries according to their priorities, as recited in claim 5.

Reversal of the rejection of claim 5 is requested.

4. Claims 6 and 140

Claims 6 and 140 were rejected together in the Office Action, but are argued separately below.

Claim 6 depends from claim 5 and recites:

> wherein the adding of requestor queries step comprises:
>
> separating a first requestor query into one or more sub-queries;
>
> prioritizing the one or more first requestor sub-queries with respect to one another;
>
> placing the one or more first requestor sub-queries in a query priority queue;
>
> separating a second requestor query into one or more sub-queries;
>
> prioritizing the one or more second requestor sub-queries with respect to one another; and
>
> placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors.

Independent claim 140 recites features similar to those quoted above in claim 6, among other features. These features are disclosed at, for example, FIG. 4A, of the present specification.

The Examiner asserts that:

> As per Claims 6, 140.
>
> DeMarcken et al further discloses separating queries into sub-queries, see page 8, lines 26-31, and further data regarding date/time when the queries are received, see page 10, lines 24-29.

(Office Action, pages 5-6). The cited passages from DeMarcken are reproduced below.

> In addition, the information could also include times, dates and so forth. This query is fed to the scheduler process 16 that produces a large number of itineraries, that is, sequences of flight segments between the origin and destination of each slice of a journey.

(DeMarcken, page 8, lines 26-31).

> Additional information can be stored in the database 70 which may typically be generated by the availability predictor 65a. For example, the query can be stored along with an entry that corresponds to the time and/or date that the query was stored, received, and/or generated. The source of the query can also be noted.

(DeMarcken, page 10, lines 24-29).

The first paragraph above (DeMarcken, page 8, lines 26-31), discusses flight segments. The second paragraph above (DeMarcken, page 10, lines 24-29), notes that a query can be stored with information regarding the time and/or date that a query was stored, received, and/or generated. Neither of the above two paragraphs, alone or in combination, teach or suggest prioritizing first requestor sub-queries with respect to one another, prioritizing second requestor sub-queries with respect to one another, placing the sub-queries in a query priority queue, and:

> ordering the first and second requestor sub-queries with respect to one another, according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors,

as recited in claims 6 and 140.

Reversal of the rejection of claims 6 and 140 is requested.

5. Claim 8

Claim 8 depends from claim 3 and recites:

> wherein the proactively generating step comprises proactively generating queries to update cached information.

Proactively generating queries to update previously cached information is disclosed at, for example, page 35, lines 22-23, of the present specification.

The Examiner asserts that DeMarken teaches these features, citing to DeMarcken at:

> Abstract;
>
> page 7, lines 1-28;
>
> page 9, line 19 – page 12, line 3
>
> page 12, line 32-page 13, line 34; and
>
> page 15, line 16 – page 16, line 32.

(Office Action, page 6). Each of these sections of DeMarcken is addressed below.

The abstract of DeMarcken is directed to predicting of airline availability information. The abstract does not address caching, proactively generating queries, or updating of cached information.

DeMarcken at page 7, lines 1-28, is directed to:

> a "plurality of databases," (DeMarcken, page 7, line 2), that "are updated periodically by the remote resources 21a, 21b." (DeMarcken, page 7, lines 10-11);
>
> an availability predictor 65 (DeMarcken, page 7, line 16-17), that "can be based upon a cache or database of stored availability queries, a predictive model of availability and/or a simulation of an availability process or an actual availability process running as a local process to the server process 12." (DeMarcken, page 7, line 17-21); and
>
> "a plurality of clients 30a-30c" (DeMarcken, page 7, line 22-23), "coupled to the server 12, via a network 22, that is

> also used to couple the remote resources 21a-21b that supply databases 20a, 20b to the server 12." (DeMarcken, page 7, line 22-28).

DeMarcken at page 7, lines 1-28 does not address proactively generating queries to update cached information.

DeMarcken at page 9, line 19, to page 12, line 3, describes:

> "a first embodiment 65a of an availability predictor 65" (DeMarcken, page 9, lines 19-20), including a database 70 that "stores availability queries and answers" (DeMarcken, page 9, lines 22), where the answers "were obtained by the availability predictor 65a when the availability predictor 65a could not trust or provide a prediction and thus issued an actual availability query…" ((DeMarcken, page 9, lines 24-26);
>
> example queries (DeMarcken, page 10, lines 4-22);
>
> "additional information that can be stored in the database 70 (DeMarcken, page 10, lines 24-36);
>
> population of database 70 with "routine direct queries" (DeMarcken, page 10, line 36, to page 11, line 16); and
>
> a predictor process 90 illustrated in FIG. 4 of DeMarcken (DeMarcken, page 11, line 17, to page 12, line 3).

The first three features above have no apparent connection to proactively generated queries or updating of cached information.

Regarding the "routine direct queries" (DeMarcken, page 10, line 36, to page 11, line 16), as discussed above with respect to claim 5, DeMarcken teaches that "the database 70 can also be populated by routine direct queries even in the absence of queries made to the predictor so that, when a query is asked of the predictor, it is less likely that a direct query would have to be made." (DeMarcken, page 10, line 36, through page 11, line 4). DeMarcken further teaches to populate the database with the routine direct queries "during off peak times" (DeMarken, page 11, line 5), or "when the system is not

otherwise in use." (DeMarken, page 11, line 7). DeMarcken does not, however, teach or suggest using routine direct queries to update cached information, as recited in claim 8.

Regarding the predictor process 90, DeMarcken at page 11, line 20, describes an "update process 92 " (DeMarcken at page 11, line 20), that "takes responses that are received from queries made by the availability predictor 90, as well as other sources, and populates them into the query database 70 as appropriate." (DeMarcken at page 11, lines 24-27). DeMarcken does not, however, teach or suggest using the routine direct queries with the update process 92, to update cached information, as recited in claim 8.

DeMarcken at page 12, line 32, to page 13, line 34, is directed to a look-up and retrieval process that searches database 70 in response to a query, and sends an "actual availability query" when availability information is not available in the database or is stale. Specifically:

> If a stored query is found 114 in the query database 70 that matches or which is substantially close in characteristics to the received query, the process 94 will retrieve 116 the stored answer.

(DeMarcken, page 13, lines 2-6).

> If the query was not found in the database 70 or if the stored query which was found is stale ..., then the process can send 126 an ***actual availability query*** to the airline availability system 66 (FIG. 2).

(DeMarcken, page 13, lines 16-29, emphasis added).

This portion of DeMarcken does not address proactively generating queries.

In summary, none of the above cited passages of DeMarcken, alone or in combination, teach or suggest proactively generating queries to update cached information, as recited in claim 8.

Reversal of the rejection of claim 8 is requested.

6. Claim 9

Claim 9 depends from claim 3, and recites:

> ordering the proactive queries for processing based on time-to-departures and age of associated cached information.

The Examiner cites DeMarcken, page 13, lines 6-15, which reads:

> The process 94 will determine if the stored answer is stale 118 by comparing the time of the query to a threshold time that can be either a preset threshold such as a certain number of minutes, hours or days or preferably a variable threshold that is determined in accordance with a threshold level predictor 120 (FIG. 7). If the answer is not stale, then the look-up and retrieval process 94 will return 120 the stored answer as a prediction of the availability of a seat on a particular flight according to the availability query.

(DeMarcken, page 13, lines 6-15).

The process described by DeMarcken above is thus directed to determining whether stored availability information is stale, and, if not, returning "the stored answer as a prediction of the availability of a seat on a particular flight," (DeMarken, page 13, lines 13-15). The passage from DeMarken, above, does not address ordering of proactive queries for processing, and thus cannot teach or suggest ordering of proactive queries for processing based on time-to-departures and age of associated cached information, as recited in claim 9.

Reversal of the rejection of claim 9 is requested.

7. Claims 14, 23, and 24

Claims 14, 23, and 24, were rejected together in the Office Action, but are argued separately below.

Claims 14, 23, and 24 are directed to requestor preferences. Requestor preferences are disclosed at, for example, page 24, lines 6-24, of the present specification.

Claim 14 depends from claim 1 and recites, wherein:

> the receiving of requestor queries step comprises receiving a requestor preference for at least one of real-time information and cached information; and
>
> the determining step comprises determining to provide the corresponding requestor with at least one of real-time information and cached information based at least in part on the requestor preference.

Claim 23 depends from claim 14 and recites:

> wherein the receiving of a requestor preference step comprises permitting a requestor to select one of the following options:
>
> return real-time information only,
>
> return cached information only,
>
> return cached information if available, otherwise consult a real-time information source, and
>
> return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source.

Claim 24 is similar to claim 23 in that it depends from claim 14 and recites the same factors, but recites:

> wherein the receiving of a requestor preference step comprises permitting a requestor to *select and prioritize a plurality of* the following options.

The Office Action states:

> As per Claims 14, 23, 24.
>
> DeMarcken et al further discloses:
>
> receiving a requestor preference for at least one of real-time or cached information and determining to provide the requestor with at least one of real-time or cached information based on the requestor preference, see page 13, lines 6-11 and figures 7 & 8.

(Office Action, page 6).

As discussed above with respect to claim 9, DeMarken, page 13, lines 6-11, is directed to determining whether stored availability information is stale, and, if not, returning "the stored answer as a prediction of the availability of a seat on a particular flight," (DeMarken, page 13, lines 13-15).

FIG. 8 of DeMarcken illustrates a table predictor 65c (DeMarcken, page 15, line 33), that generates an availability prediction in response to queries (DeMarcken, page 16, lines 4, 5, and 22), and a confidence factor associated with the prediction (DeMarcken, page 16, lin30).

FIG. 7 of DeMarcken illustrates a threshold level predictor 140 (DeMarcken, page 14, lines 4-5), which can be trained with historical data to determine how long a stored availability status remains valid. (DeMarken, page 14, line 14, to page 15, line 4). "The threshold level predictor 140 can be used by the look-up and retrieval process 94 to determine whether a stored query is stale." (DeMarcken, page 14, lines 4-5). Inputs to the threshold level predictor 140 are described as follows:

> The threshold level predictor 140 can be fed by query factors 142 such as the date of a flight, origin and destination of the flight, size of the airplane and so forth and also fed by predictor inputs 14 that determine relative weights, for example, to assign to each one of the query factors.

(DeMarcken, page 14, lines 5-10).

Neither the passage of DeMarcken cited in the Office Action, FIG. 7, FIG. 8, or the descriptions thereof, address requestor preferences, and thus do not teach or suggest, alone or in combination, "receiving a requestor preference for at least one of real-time information and cached information," and "determining to provide the corresponding requestor with at least one of real-time information and cached information based at least in part on the requestor preference," as recited in claim 14.

Additionally, neither the passage of DeMarcken cited in the Office Action, FIG. 7, FIG. 8, or the descriptions thereof, alone or in combination, teach or suggest, permitting a requestor *to select one of* the features recited in claim 23, or *to select and prioritize a plurality of* the features recited in and 24.

Reversal of the rejection of claims 14, 23, and 24 is requested.

8. Claim 16

Claim 16 depends from claim 1 and recites:

> querying one or more information sources through one or more proxies.

Proxies are systems that connect with information sources (specification, page 45, lines 17-19), "via some (usually proprietary) protocol." (Specification, page 46, lines 2-3). Proxies can be, for example, travel agent terminals. (Specification, page 45, lines 20-21). Proxies are disclosed in the specification at, for example:

> page 3, lines 8-11, and page 45, line 14, through page 46, line 13;
>
> page 57, lines 10-19, describing steps 1308 and 1310 in FIG. 13
>
> page 58, lines 19-21, describing step 1214 in FIG. 12C;
>
> page 58, line 22, through page 23, line 4; and
>
> page 60, lines 1-5, describing an optional proxy module 1502 and proxies 1504a-1504n, illustrated in FIG. 15.

The Examiner cites DeMarcken, page 7, lines 9-15 as teaching querying through one or more proxies. (Office Action, page 6).

The cited passage of DeMarcken reads:

> The databases 20a, 20b are typically stored locally and updated periodically by the remote resources 21a, 21b. In addition, the system 10 can access an availability system 66 of one or more airlines (generally each airline will have its own availability system) by sending availability queries over the network 22.

(DeMarcken, page 7, lines 9-15).

The passage above from DeMarcken, and FIG. 1 of DeMarcken, teach sending queries to one or more airline availability systems 66 over the network 22, and teach that each airline will have its own availability system. DeMarcken does not, however, teach or suggest using proxies to send the queries over the network 22 to the airline availability systems. DeMarcken thus, does not teach or suggest "querying one or more information sources through one or more proxies," as recited in claim 16.

Reversal of the rejection of claim 16 is requested.

9. Claim 25

Claim 25 depends from claim 1 and recites:

> caching recently updated information separately from less recently updated information and searching the recently updated cached information when real-time information is sought.

These features are disclosed at, for example, page 25, lines 4-24 of the specification.

The Examiner cites DeMarcken, page 12, line 4, through page 13, line 15, as teaching these features. (Office Action, page 7).

The cited passage of DeMarcken describes, among other features, a look-up and retrieval process 94, for processing a received query. (DeMarcken, page 12, line 32, to

page 13, line 2). The look-up and retrieval process 94 searches a query database 70 to identify a stored query that matches or is substantially similar to a received query. (DeMarcken, page 12, line 32, to page 13, line 5). If such a stored query is found, a stored answer that is associated with the stored query is retrieved. (DeMarcken, page 13, lines 5-6). The look-up and retrieval process 94 then determines whether the stored answer is stale. (DeMarcken, page 13, line 6-11). If not, the stored answer is returned "as a prediction of the availability of a seat on a particular flight according to the availability query." (DeMarcken, page 12, lines 13-15).

If no suitable query is found in the database, or if the stored answer is stale, the process may select another availability predictor process. (DeMarcken, page 13, line 17-25)." Otherwise, if the look-up and retrieval process 94 does not have a predictor or does not trust the predictor, then the process can send 126 an actual availability query to the airline availability system 66 (FIG. 2). (DeMarcken, page 13, lines 25-29). If an actual availability query is sent to an airline availability system, the "answer that is received 128 from the airline availability system 66 is returned 130 as the answer and can be used to update 130 the database 70." (DeMarcken, page 13, lines 29-31).

DeMarcken thus teaches to send an actual availability query when a stored answer is stale or unavailable. DeMarcken does not, however, teach or suggest:

> caching recently updated information separately from less recently updated information and searching the recently updated cached information when real-time information is sought,

as recited in claim 25.

Reversal of the rejection of claim 25 is requested.

10. Claims 43-51

Claims 43-51 were each rejected in view of DeMarcken, page 13, lines 6-15, (Office Action, pages 7-8). Claims 43-51 are argued separately below.

Each of claims 43-51 depend directly from claim 3, and recite "wherein the proactively generating step comprises assigning priorities to queries according to," the various features recited in claims 43-51.

DeMarcken, page 13, lines 6-15, reads:

> The process 94 will determine if the stored answer is stale 118 by comparing the time of the query to a threshold time that can be either a preset threshold such as a certain number of minutes, hours or days or preferably a variable threshold that is determined in accordance with a threshold level predictor 120 (FIG. 7). If the answer is not stale, then the look-up and retrieval process 94 will return 120 the stored answer as a prediction of the availability of a seat on a particular flight according to the availability query.

(DeMarcken, page 13, lines 6-15).

The process described by DeMarcken above is thus directed to determining whether stored availability information is stale, and, if not, returning "the stored answer as a prediction of the availability of a seat on a particular flight," (DeMarken, page 13, lines 13-15). The passage from DeMarken, above, does not teach or suggest assigning of priorities to queries, and thus cannot teach or suggest, "wherein the proactively generating step comprises assigning priorities to queries according to:"

> an associated market (claim 43);
>
> frequency of flights (claim 44);
>
> frequency of changes associated with availability of corresponding flights (claim 45);
>
> market importance (claim 46);
>
> nearness of departure time (claim 47:
>
> age of cached information (claim 48);

number of remaining available seats (claim 49);

anticipated increases in travel volume (claim 50); or

at least one of a type of a product and a type of a service (claim 51).

Reversal of the rejections of claims 43 to 51 is requested.

11. Claims 52 and 53

Claims 52 and 53 were each rejected in view of DeMarken, page 7, lines 1-4, and page 13, lines 6-15, (Office Action, page 8). Claims 52 and 53 are argued separately below.

Claims 52 and 53 depend directly from claim 3. Claim 52 recites "assigning lower priority to forms of ground transportation." Claim 53 recites "assigning lower priority to flights that use propeller planes."

As discussed above with respect to claims 43-51, DeMarcken, page 13, lines 6-15, is directed to determining whether stored availability information is stale, and, if not, returning "the stored answer as a prediction of the availability of a seat on a particular flight," (DeMarken, page 13, lines 13-15).

DeMarcken, page 7, lines 1-4, reads:

> The travel planning system also includes a plurality of databases 20a, 20b which store industry standard information pertaining to travel, for example, airline, bus, railroad, etc.

(DeMarcken, page 13, lines 6-15).

Neither of the above passages from DeMarken, alone or in combination, teach or suggest assigning of priorities to queries, and thus cannot teach or suggest "assigning lower priority to:"

"forms of ground transportation " (claim 52); or

"flights that use propeller planes," (claim 53).

Reversal of the rejection of claims 52 and 53 is requested.

12. Claims 55 and 167

Claims 55 and 167 were rejected together in the Office Action, but are argued separately below.

Claim 55 depends from claim 3 and recites:

> wherein the proactively generating step comprises updating cached airline availability information according to multiple priorities.

Independent claim 167 recites, among other features:

> proactively generating one or more queries independent of requestor queries, including proactively generating one or more queries to update cached airline availability information according to multiple priorities.

Updating of proactively generated queries according to multiple priorities is disclosed at, for example, page 37, line 9, through page 42.

The Office Action states:

> As per Claim 55, 167.
>
> DeMarcken et al further discloses:
>
> updating cached airline availability according to multiple priorities, see page 11, lines 8-14.

(Office Action, page 8).

The cited passage from DeMarcken provides:

> The database engine 80 populates the database 70. The engine 80 can produce queries of certain types depending upon the relative factors involved in any particular flight and/or airline. Such routine queries could be automatically produced by the database engine 80 for those markets and/or flights in which air travel is particularly heavy or during such periods of time where air travel between particular origins and destinations would be particularly heavy.

(DeMarcken, page 11, lines 8-15).

The passage from DeMarcken, reproduced above, does not address *updating of cached information*. The passage thus does not teach or suggest "proactively generating one or more queries *to update cached airline availability information* according to multiple priorities," as recited in claims 55 and 167.

Reversal of the rejection of claims 55 and 167 is requested.

13. Claims 57 and 168

Claims 57 and 168 were rejected together in the Office Action, but are argued separately below.

Claim 57 depends from claim 55 and recites:

> wherein the proactively generating step further comprises:
>
> prioritizing the cached airline availability information according to departure times;
>
> prioritizing the cached airline availability information according to one or more additional features; and
>
> updating the cached airline availability information based on a combination of the priorities associated with the departure time and the one or more additional features.

Claim 168 recites the features listed above, among other features.

The Office Action states:

> As per Claim 57, 168.
>
> DeMarcken et al further discloses:
>
> prioritizing the cached airline availability information according to departure times, see figure 8;
>
> prioritizing the cached airline availability information according to I=one [sic] or more additional features, see figure 8 (airline);
>
> updating cached airline availability according to multiple priorities, see page 11, lines 8-14.

(Office Action, page 8).

DeMarcken, page 11, lines 8-14, is reproduced and distinguished above with respect to claims 55 and 167.

FIG. 8 of DeMarcken illustrates a table predictor 65c (DeMarcken, page 15, line 33). FIG. 8 is described in DeMarcken at page 15, line 33, through page 16, line 31. The table predictor 65c is used to generate an availability prediction in response to queries (DeMarcken, page 16, lines 4, 5, and 22). The table predictor 65c is also used to generate a confidence factor associated with the prediction (DeMarcken, page 16, lin30).

Neither the cited passage from DeMarcken, FIG. 8, or the corresponding description thereof, address *updating of cached information*, and thus cannot teach or suggest prioritizing of cached information according to departure times and one or more additional features, and updating the cached information based on a combination of the priorities, as recited in claims 57 and 168.

Reversal of the rejection of claims 57 and 168 is requested.

14. Claims 60 and 169

Claims 60 and 169 were rejected together at page 9 of the Office Action, but are argued separately below.

Claims 60 and 169 are directed to predicting an availability status based on prior observed variables, including prior availability information, and recite, wherein the predicting includes:

> identifying one or more factors associated with availability status;
>
> learning a relationship between historical values for the one or more factors and historical values for availability status;
>
> generating a function according to the learned relationship; and
>
> providing new values for the one or more factors to the function, whereby the function outputs predicted values for availability status.

The Examiner asserts that:

> As per Claim 60, 169.
>
> DeMarcken et al further discloses:
>
> identifying one or more factors associated with availability status, page 9, lines 9-12;
>
> learning a relationship between historical value[s] for one or more factors and historical values for availability factors, see page 9, lines 13-27;
>
> generating a function according to the learned relationship, see page 9, lines 13-34;
>
> providing new values for the one or more factors to the function, whereby the function outputs predicted values for availability status, see page 9, lines 13-34.

(Office Action, page 9).

The cited passages from DeMarcken provide:

> The availability predictor 65 can be implemented using various techniques, as will be described below, which may include producing actual queries that are sent to an airline availability system 66. The answers received from the queries can be used to train the availability predictor 65. From the pricing solution information 38 and the availability information provided from the availability predictor 65, a client system or other system can access 58 a booking system 62 to issue a ticket for a customer.
>
> Referring now to FIG. 3, a first embodiment 65a of an availability predictor 65 includes a database 70, a database engine 80 and a predictor process 90. The database 70 stores availability queries and answers as shown. The database 70 includes queries and answers that were obtained by the availability predictor 65a when the availability predictor could not trust or provide a prediction and thus issued an actual availability query, as well as, queries that are received from other sources. For example, the availability predictor can be run as part of a server process by a computer reservation service (CRS). The CRS may have access to availability queries that are run by

> travel agents, for example, that are associated with the computer reservation service. The queries and the results of these queries can be forwarded and stored in the database 70.

(DeMarcken, page 9, lines 9-34).

DeMarcken thus teaches that the "answers received from the queries can be used to train the availability predictor 65." (DeMarcken, page 9, lines 13-14). DeMarcken also teaches that the "availability predictor 65 can be implemented using various techniques." (DeMarcken, page 9, lines 9-10).

DeMarcken does not, however, teach or suggest, "identifying one or more factors associated with availability status," and thus cannot teach or suggest, "learning a relationship between historical values *for the one or more factors* and historical values for availability status," and "generating a function according to the learned relationship," as recited in claims 60 and 169.

Applicants note that DeMarcken also teaches that "an alternative mechanism 65d for an availability predictor 65 includes an airline availability processing system simulator 192." (DeMarcken, page 21, lines 2-4, referring to FIG. 11).

> The simulator 192 can be the actual yield management program used by an airline or more likely would be a program that is constructed to model the yield management system used by the airline. The simulator 192 can use historical data 196, i.e., historical direct queries and answers, as well as current bookings 198.

(DeMarcken, page 21, lines 28-33).

This passage of DeMarcken also does not teach or suggest "identifying one or more factors associated with availability status," and thus cannot teach or suggest, "learning a relationship between historical values *for the one or more factors* and historical values for availability status," and "generating a function according to the learned relationship," as recited in claims 60 and 169.

Reversal of the rejection of claims 60 and 169 is requested.

15. Claim 63

Independent claim 63 recites, among other features:

> prioritizing the requestor queries; and
>
> processing the requestor queries in accordance with the associated priorities.

In the rejection of claim 63, the Office Action does not address these features (Office Action, page 9). In the rejection of claim 1, however, the Office Action cited the following passages of DeMarcken as teaching these features:

> page 11, lines 4-7;
>
> page 17, lines 27-34;
>
> page 18, lines 24-30; and
>
> page 21, lines 2-11.

(Office Action, page 4).

As discussed above with respect to claim 1, none of these passages, alone or in combination, teach or suggest, "prioritizing the requestor queries," and "processing the requestor queries in accordance with the associated priorities," as recited in claim 63.

Reversal of the rejection of claim 63 is requested.

16. Claim 64

Independent claim 64 recites, among other features:

> a prioritizing function that causes the computer system to prioritize the requests and to process the requests in accordance with the associated priorities.

In the rejection of claim 64, the Office Action does not address these features (Office Action, pages 9-10). In the rejection of claim 1, however, the Office Action cited the following passages of DeMarcken as teaching prioritization of requestor queries and processing of the requestor queries in accordance with the associated priorities:

> page 11, lines 4-7;

page 17, lines 27-34;

page 18, lines 24-30; and

page 21, lines 2-11.

(Office Action, page 4).

As discussed above with respect to claim 1, none of these passages, alone or in combination, teach or suggest, "a prioritizing function that causes the computer system to prioritize the requests and to process the requests in accordance with the associated priorities," as recited in claim 64.

Reversal of the rejection of claim 64 is requested.

D. Rejections under 35 U.S.C. § 103

1. Claim 22

In paragraph 6 of the Office Action (page 10), claim 22 was rejected under 35 U.S.C. § 103(a), as being unpatentable over DeMarcken in view of U.S. Patent No. 5,832,454 to Jafri *et al.*, (hereinafter "Jafri").

Appellants appeal the rejection on the grounds that neither DeMarcken nor Jaffri, alone or in combination, teach or suggest all of the features recited in claim 22.

Claim 22 recites:

> The method according to claim 1, wherein the receiving of requestor queries step comprises receiving a request for one or more of the following additional types of information:
>
> hotel availability information,
>
> rental car availability information,
>
> taxi availability information,
>
> entertainment availability information, and
>
> restaurant availability information;

> wherein the prioritizing, the processing, the determining, and the providing steps are performed for the one or more additional types of information.

According to the Examiner:

> Jafri et al ('454) [teaches] databases with hotel, rental car and airline data as equivalent, see figure 2.

(Office Action, paragraph 6).

Jafri is directed to reservation software for making travel arrangements including airline, hotel and car reservations. (Jafri, Abstract). FIG. 2 of Jafri illustrates software components of the system (Jafri, column 3, lines 34-35).

Jafri does not, however, teach or suggest, among other features, "prioritizing the requestor queries " and "processing the requestor queries in accordance with the associated priorities," as recited in claim 1. Jafri does not, therefore, cure the deficiencies of DeMarcken described above with respect to claim 1.

Reversal of the rejection of claim 22 is requested.

2. Claims 26 and 27

In paragraph 7 of the Office Action, claims 26 and 27 were rejected under 35 U.S.C. § 103(a), as being unpatentable over DeMarcken in view of U.S. Patent No. 4,862,357 to Ahlstrom *et al.*, (hereinafter "Ahlstrom").

Appellants appeal the rejection on the grounds that neither DeMarcken nor Ahlstrom, alone or in combination, teach or suggest all of the features recited in claim 26 or claim 27.

a) Claim 26

Claim 26 recites:

> The method according to claim 1, further comprising:

> *permitting a requestor to specify* approximate departure times in the requests for airline availability information; and
>
> searching a cache for requested information.

According to the Examiner:

> As per Claim 26.
>
> DeMarcken et al does not disclose discloses [sic] permitting the requestor to specify approximate departure times in the requests for availability information and searching the cache for the requested information.
>
> Ahlstrom et al ('357) teaches allowing arrival and departure time ranges for the benefit of providing responsive itinerary planning service to the customer, see figure 4a-1 (78, 80, 82).

(Office Action, page 10).

Ahlstrom is directed to a reservation system that ranks travel itineraries. (Ahlstrom, column 1, lines 39-44). Although Ahlstrom teaches time ranges for departure and arrival times, Ahlstrom does not teach or suggest, "permitting a requestor to specify approximate departure times in the requests for airline availability information," as recited in claim 26.

Ahlstrom notes that:

> It will be understood that flights scheduled to leave within a specified time range based around a desired departure time or arrival time will be acceptable."

(Ahlstrom, column 4, lines 1-4).

Steps 78, 80, and 82 of Ahlstrom, illustrated in FIG. 4a-1 of Ahlstrom, and cited by the Examiner, are performed as part of a data retrieval process from a remote database (Ahlstrom, column 3, line 35 to line 40). Step 78 directs processing to steps 80 and 82 for departure time scheduling, or to steps 84 and 86 for arrival time scheduling. (Ahlstrom, column 3, line 67, to column 4, line 1). Ahlstrom further provides:

> Steps 80 and 82 respectively determine whether a particular flight is scheduled to leave earlier than or later than a desired departure time. Flights that are scheduled to leave earlier than the desired departure time range are rejected at step 80 on the premise that the traveler would not be able to make an earlier flight. Flights scheduled to leave after the desired departure time range are rejected at step 82 on the premise that the traveler is not willing to wait for the flight.

(Ahlstrom, column 4, lines 5-13).

Ahlstrom does not, however, teach or suggest that the "desired departure time range" is specified by a requestor. Ahlstrom thus does not teach or suggest "*permitting a requestor* to specify approximate departure times in the requests for airline availability information," as recited in claim 26.

Ahlstrom also does not cure the deficiencies of DeMarcken, as described above with respect to claim 1.

Reversal of the rejection of claim 26 is requested.

b) Claim 27

Claim 27 depends from claim 26 and recites, wherein the searching a cache step comprises:

> rounding-up actual departure times for flights, providing at least the rounded-up actual departure times to a hashing function, and storing information associated with the flights in a hash table based on resulting rounded-up hash table indexes;
>
> rounding-down actual departure times for each flight, providing at least the rounded-down actual departure times to the hashing function, and storing information associated with the flights in the hash table based on resulting rounded-down hash table indexes;
>
> rounding-up a requestor-specified departure time, providing the rounded-up requestor-specified departure time to the

> hash function, and searching the hash table based on a resulting hash table index; and
>
> rounding-down the requestor-specified departure time, providing the rounded-down requestor-specified departure time to the hash function, and searching the hash table based on a resulting hash table index.

According to the Examiner:

> Ahlstrom et al ('357) teaches rounding arrival and departure time ranges for the benefit of providing responsive itinerary planning service to the customer, see figure 4a-1 (78, 80, 82).

(Office Action, page 11).

FIGS. 4a-1, steps 78, 80, and 82, of Ahlstrom, and their associated description, are discussed above with respect to claim 26.

Nowhere in FIGS. 4a-1, steps 78, 80, and 82, or their associated description, does Ahlstrom address rounding departure times up and down, providing the rounded times to a hashing function, and searching a hash table based on a resulting hash table index, as recited in claim 27.

Reversal of the rejection of claim 27 is requested.

VIII. Conclusion

For the reasons set forth above, it is respectfully submitted that the Examiner's rejections of claims 1-64 and 140, 150, 151, 165, 167-169, and 171, are erroneous. Appellants contend that the Examiner's errors are reversible error. Accordingly, the Honorable Board is respectfully requested to reverse the Examiner and remand the captioned application for issuance.

Respectfully submitted,

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Appendix A

Claims

1. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

prioritizing the requestor queries;

processing the requestor queries in accordance with the associated priorities;

determining to provide the requestors with at least one of real-time airline availability information and cached airline availability information based at least in part on one or more factors associated with one or more of the requestors, the requestor queries, the requested airline availability information, and the airline availability information sources; and

providing information to the requestors in accordance with the determining.

2. The method according to claim 1, further comprising:

monitoring airline availability information traffic between an airline availability information source and one or more clients of the airline availability information source; and

caching at least a portion of the monitored airline availability information.

3. The method according to claim 1, further comprising:

proactively generating one or more queries independent of requestor queries; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

4. The method according to claim 1, further comprising:

monitoring airline availability information traffic between an airline availability information source and one or more clients of the airline availability information source;

caching at least a portion of the monitored airline availability information;

proactively generating one or more queries independent of requestor queries; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

5. The method according to claim 3, further comprising:

adding the requestor queries to a query priority queue;

adding proactively generated queries to the query priority queue, at lower priorities than the requestor queries; and

processing the requestor queries and the proactively generated queries according to their priorities.

6. The method according to claim 5, wherein the adding of the requestor queries step comprises:

separating a first requestor query into one or more sub-queries;

prioritizing the one or more first requestor sub-queries with respect to one another;

placing the one or more first requestor sub-queries in the query priority queue;

separating a second requestor query into one or more sub-queries;

prioritizing the one or more second requestor sub-queries with respect to one another; and

placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors.

7. The method according to claim 3, wherein the proactively generating step comprises proactively generating queries to populate cache.

8. The method according to claim 3, wherein the proactively generating step comprises proactively generating queries to update cached information.

9. The method according to claim 3, wherein the proactively generating step comprises ordering the proactive queries for processing based on time-to-departures and age of associated cached information.

10. The method according to claim 9, wherein the proactively generating step further comprises:

generating a plurality of storage buckets in a memory;

associating at least a portion of the buckets with various time-to-departures;

ordering the buckets according at least to their associated time-of-departures;

bucketing the proactive queries according at least to their associated time-to-departures;

ordering the proactive queries within the buckets at least according to ages of previously cached information associated with the proactive queries;

re-bucketing the proactive queries as their associated time-to-departures change; and

selecting a bucket for processing according to the ordering of the buckets, and processing the proactive queries within the selected bucket, skipping proactive queries for which information is presently cached and newer than a predetermined age.

11. The method according to claim 10, wherein:

the associating step comprises associating the buckets with various time-to-departures and according to one or more modes of transportation; and

the ordering of the buckets step comprises ordering the buckets according to the nearness to time-of-departures and the associated modes of transportation.

12. The method according to claim 10, further comprising:

adding the requestor queries to a query priority queue;

adding proactively generated queries from buckets selected in accordance with the selecting step to the query priority queue at lower priorities than the requestor queries; and

processing the requestor queries and the proactively generated queries in the query priority queue according to their priorities.

13. The method according to claim 12, wherein the adding of the requestor queries step comprises:

separating a first requestor query into one or more sub-queries;

prioritizing the one or more first requestor sub-queries with respect to one another;

placing the one or more first requestor sub-queries in the query priority queue;

separating a second requestor query into one or more sub-queries;

prioritizing the one or more second requestor sub-queries with respect to one another; and

placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestor are processed before lower priority sub-queries of the first and second requestor.

14. The method according to claim 1, wherein:

the receiving of requestor queries step comprises receiving a requestor preference for at least one of real-time information and cached information; and

the determining step comprises determining to provide the corresponding requestor with at least one of real-time information and cached information based at least in part on the requestor preference.

15. The method according to claim 1, wherein the determining step comprises determining to provide a requestor with one or more of real-time information and cached information based at least in part on one or more of the following factors:

an availability of requested information in cache,

a currently cached flight availability count,

a requestor preference for cached information,

a requestor preference for realtime information,

an age of the cached information,

a requestor identification,

a requestor importance factor,

a time of day,

a proxy availability,

availability of recently cached information,

one or more rules associated with an information source,

an activity/load at a realtime information source,

anticipated turn around time to an information source,

total number of seats,

a nearness to time-to-departure,

a market importance,

a frequency of prior availability changes, and

a mode of transportation.

16. The method according to claim 1, further comprising:

querying one or more information sources through one or more proxies.

17. The method according to claim 16, wherein the querying through one or more proxies step comprises:

monitoring an operational status of the one or more proxies and selecting proxies for querying based on the monitored operational status.

18. The method according to claim 16, wherein the querying through one or more proxies step comprises:

monitoring response times for the one or more proxies and selecting proxies for querying based at least on the response times.

19. The method according to claim 16, wherein the querying through one or more proxies step comprises:

maintaining a list of unsupported suppliers for which information is not available on the one or more information sources; and

returning queries for information from the unsupported suppliers without querying an information source.

20. The method according to claim 16, wherein the querying through one or more proxies step comprises:

maintaining proxy records for available proxies in a proxy queue; and

removing a higher priority proxy record from the proxy queue to process a query.

21. The method according to claim 20, wherein the maintaining of proxy records step comprises maintaining the proxy queue as part of a query priority queue.

22. The method according to claim 1, wherein the receiving of requestor queries step comprises receiving a request for one or more of the following additional types of information:

hotel availability information,

rental car availability information,

taxi availability information,

entertainment availability information, and

restaurant availability information;

wherein the prioritizing, the processing, the determining, and the providing steps are performed for the one or more additional types of information.

23. The method according to claim 14, wherein the receiving of a requestor preference step comprises permitting a requestor to select one of the following options:

return real-time information only,

return cached information only,

return cached information if available, otherwise consult a real-time information source, and

return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source.

24. The method according to claim 14, wherein the receiving of a requestor preference step comprises permitting a requestor to select and prioritize a plurality of the following options:

return real-time information only,

return cached information only,

return cached information if available, otherwise consult a real-time information source, and

return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source.

25. The method according to claim 1, further comprising:

caching recently updated information separately from less recently updated information and searching the recently updated cached information when real-time information is sought.

26. The method according to claim 1, further comprising:

permitting a requestor to specify approximate departure times in the requests for airline availability information; and

searching a cache for requested information.

27. The method according to claim 26, wherein the searching a cache step comprises:

rounding-up actual departure times for flights, providing at least the rounded-up actual departure times to a hashing function, and storing information associated with the flights in a hash table based on resulting rounded-up hash table indexes;

rounding-down actual departure times for each flight, providing at least the rounded-down actual departure times to the hashing function, and storing information associated with the flights in the hash table based on resulting rounded-down hash table indexes;

rounding-up a requestor-specified departure time, providing the rounded-up requestor-specified departure time to the hash function, and searching the hash table based on a resulting hash table index; and

rounding-down the requestor-specified departure time, providing the rounded-down requestor-specified departure time to the hash function, and searching the hash table based on a resulting hash table index.

28. The method according to claim 1, further comprising:

initiating a control thread for a query, whereby the query includes one or more sub-queries;

initiating a worker thread for each sub-query associated with the query;

prioritizing the worker threads with respect to one another; and

processing the worker threads according to associated priorities.

29. The method according to claim 1, further comprising sharing a flight availability count record between a plurality of flight records stored in a cache.

30. The method according to claim 1, further comprising:

associating multiple flight records as married flight records in a cache; and

sharing a flight availability count record between at least one of the multiple flight records and another flight record in the cache.

31. The method according to claim 1, wherein the providing step comprises searching for cached information after waiting a pre-determined time for real-time information.

32. The method according to claim 1, further comprising:

communicating with at least a portion of the one or more information sources through proxies, whereby the proxies interface with the at least a portion of the one or more of the information sources using information source specific codes.

33. The method according to claim 32, wherein the communicating step comprises:

measuring one or more response characteristics associated with the proxies;

prioritizing the proxies according to the response characteristics measurements; and

maintaining a proxy priority queue, whereby queries are passed to higher priority proxies.

34. The method according to claim 32, wherein the communicating step comprises:

identifying one or more information sources that proxies cannot communicate with; and

filtering out queries directed to the identified information sources.

35. The method according to claim 32, wherein the communicating step comprises:

monitoring an operational status of the proxies; and

optimizing use of the proxies based on the operational status of the proxies.

36. The method according to claim 32, further comprising:

simulating replies from the proxies.

37. The method according to claim 3, wherein the sending step comprises sending the one or more proactively generated queries during periods of low information source activity.

38. The method according to claim 3, wherein the proactively generating step comprises generating background threads that pose queries that appear to come from requestors.

39. The method according to claim 3, wherein the proactively generating step comprises filtering one or more queries out of proactive caching.

40. The method according to claim 39, wherein the filtering step comprises filtering out queries related to airline flights for which fares are not available.

41. The method according to claim 39, wherein the filtering step comprises filtering out queries related to flights on unsupported carriers.

42. The method according to claim 39, wherein the filtering step comprises filtering out queries related to flights that users are not expected to request.

43. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to an associated market.

44. The method according to claim 3, wherein the proactively generating step comprises assigning priorities to queries according to a frequency of flights.

45. The method according to claim 3, wherein the proactively generating step comprises assigning priorities to queries according to a frequency of changes associated with availability of corresponding flights.

46. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to a market importance.

47. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to nearness of departure time.

48. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to an age of cached information.

49. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to a number of remaining available seats.

50. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to anticipated increases in travel volume.

51. The method according to claim 3, wherein the proactively generating step comprises assigning priority to queries according to at least one of a type of a product and a type of a service.

52. The method according to claim 3, wherein the proactively generating step comprises assigning lower priority to forms of ground transportation.

53. The method according to claim 3, wherein the proactively generating step comprises assigning lower priority to flights that use propeller planes.

54. The method according to claim 3, wherein the proactively generating step comprises assigning priority according to a total number of available seats.

55. The method according to claim 3, wherein the proactively generating step comprises updating cached airline availability information according to multiple priorities.

56. The method according to claim 55, wherein the proactively generating step further comprises encoding the multiple priorities into a mathematical function that assigns a combined priority value to units of cached airline availability information, and updating the cached airline availability information according to the associated combined priority values.

57. The method according to claim 55, wherein the proactively generating step further comprises:

prioritizing the cached airline availability information according to departure times;

prioritizing the cached airline availability information according to one or more additional features; and

updating the cached airline availability information based on a combination of the priorities associated with the departure time and the one or more additional features.

58. The method according to claim 1, further comprising:

predicting an availability status.

59. The method according to claim 58, wherein the predicting step comprises predicting availability status based on prior observed variables, including prior availability information.

60. The method according to claim 59, wherein the predicting step further comprises:

identifying one or more factors associated with availability status;

learning a relationship between historical values for the one or more factors and historical values for availability status;

generating a function according to the learned relationship; and

providing new values for the one or more factors to the function, whereby the function outputs predicted values for availability status.

61. The method according to claim 1, further comprising:

separating a first requestor query into one or more sub-queries;

prioritizing the one or more first requestor sub-queries with respect to one another;

placing the one or more first requestor sub-queries in a query priority queue;

separating a second requestor query into one or more sub-queries;

prioritizing the one or more second requestor sub-queries with respect to one another;

placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors; and

processing the queries in the query priority queue according to their associated priorities.

62. The method according to claim 1, further comprising:

monitoring airline availability information traffic between an airline availability information source and one or more clients of the airline availability information source;

determining a likelihood that information will be received within a period of time by the monitoring;

generating proactive queries for information not likely to be received within the period of time; and

caching information returned in response to the proactive queries.

63. A method of interfacing between one or more requestors and one or more information sources, comprising:

querying one or more information sources for information;

receiving the information from the one or more information sources;

caching the received information;

receiving queries from requestors for at least a portion of the information;

prioritizing the requestor queries;

processing the requestor queries in accordance with the associated priorities;

determining to provide the requestors with at least one of real-time information and cached information based at least in part on one or more factors

associated with one or more of the requestors, the requests, the requested information, and the one or more information sources; and

providing information to the requestors in accordance with the determining.

64. A computer program product including a computer useable medium having computer program logic stored therein to enable a computer system to interface between one or more requestors and one or more information sources, wherein said computer program logic comprises:

a receiving function that causes the computer system to receive requests for information from information requestors;

a prioritizing function that causes the computer system to prioritize the requests and to process the requests in accordance with the associated priorities;

a query process function that causes the computer system to determine to process a query, at least, with out-of-cache or with real-time information, based at least in part on one or more factors associated with one or more of the requestors, the requests, the requested information, and the one or more information sources;

a query function that causes the computer system to query the one or more information sources when it determines to process a query with real-time information; and

a cache control function that causes the computer system to cache information returned from the one or more information sources.

65. - 139. (*cancelled*)

140. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

separating a first requestor query into one or more sub-queries;

prioritizing the one or more first requestor sub-queries with respect to one another;

placing the one or more first requestor sub-queries in a query priority queue;

separating a second requestor query into one or more sub-queries;

prioritizing the one or more second requestor sub-queries with respect to one another;

placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors;

proactively generating one or more queries independent of the requestor queries;

adding the proactively generated queries to the query priority queue at lower priorities than the requestor queries;

processing the requestor queries and the proactively generated queries according to their priorities;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

141. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining;

proactively generating queries independent of the requestor queries;

generating a plurality of storage buckets in a memory;

associating at least a portion of the buckets with various time-to-departures;

ordering the buckets according at least to their associated time-of-departures;

bucketing the proactive queries according at least to their associated time-to-departures;

ordering the proactive queries within the buckets at least according to ages of previously cached information associated with the proactive queries;

re-bucketing the proactive queries as their associated time-to-departures change;

selecting a bucket for processing according to the ordering of the buckets and processing the proactive queries within the selected bucket, skipping proactive queries for which information is presently cached and newer than a predetermined age, wherein the processing includes sending the proactively

generated queries to one or more airline availability information sources according to the bucket selecting; and

caching information returned from the proactive queries.

142. The method according to claim 141, wherein:

the associating step includes associating the buckets with various time-to-departures and according to one or more modes of transportation; and

the ordering step includes ordering the buckets according to the nearness to time-of-departures and the associated modes of transportation.

143. The method according to claim 141, further comprising:

adding the requestor queries to a query priority queue;

adding proactively generated queries from buckets selected in accordance with the selecting, to the query priority queue, at lower priorities than the requestor queries; and

processing the requestor queries and the proactively generated queries in the query priority queue according to their priorities.

144. The method according to claim 143, wherein the adding of requestor queries step comprises:

separating a first requestor query into one or more sub-queries;

prioritizing the one or more first requestor sub-queries with respect to one another;

placing the one or more first requestor sub-queries in the query priority queue;

separating a second requestor query into one or more sub-queries;

prioritizing the one or more second requestor sub-queries with respect to one another; and

placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestor are processed before lower priority sub-queries of the first and second requestor.

145. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining; and

querying one or more of the information sources through one or more proxies, including monitoring an operational status of the one or more proxies and selecting proxies for querying based on the monitored operational status.

146. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining; and

querying one or more of the information sources through one or more proxies, including monitoring response times for the one or more proxies and selecting proxies for querying based at least on the response times.

147. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining; and

querying one or more of the information sources through one or more proxies, including maintaining a list of unsupported suppliers for which information is not available on the one or more information sources and returning queries for information from the unsupported suppliers without querying an information source.

148. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining; and

querying one or more of the information sources through one or more proxies, including maintaining proxy records for available proxies in a proxy queue and removing a higher priority proxy record from the proxy queue to process a query.

149. The method according to claim 148, further comprising maintaining the proxy queue as part of a query priority queue.

150. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

permitting at least one of the requestors to select one of the following options,

return real-time information only,

return cached information only,

return cached information if available, otherwise consult a real-time information source, and

return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source;

determining to provide the requestors with at least one of the following types of airline availability information based at least in part on a requestor selected option,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining.

151. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for the airline availability information;

permitting at least one of the requestors to select and prioritize a plurality of the following options,

return real-time information only,

return cached information only,

return cached information if available, otherwise consult a real-time information source, and

return cached information if the cached information is less than N seconds old, where N is a real number, otherwise consult the real-time information source;

determining to provide the requestors with at least one of the following types of airline availability information based at least in part on requestor selected options and prioritizations,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining.

152. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving a query from a requestor for airline availability information, wherein the query includes one or more sub-queries;

initiating a control thread for the query;

initiating a worker thread for each sub-query associated with the query;

prioritizing the worker threads with respect to one another;

processing the worker threads according to the associated priorities;

determining to provide the requestor with at least one of the following types of airline availability information,

real-time information, and

cached information; and

providing information to the requestor in accordance with the determining.

153. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

sharing a flight availability count record between a plurality of cached flight records;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining.

154. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

associating multiple flight records as married flight records in the cache;

sharing a flight availability count record between at least one of the multiple flight records and another flight record in the cache;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining.

155. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining; and

searching for cached information after waiting a pre-determined time for real-time information.

156. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining; and

communicating with at least a portion of the one or more airline availability information sources through proxies, whereby the proxies interface with the at least a portion of the one or more airline availability information sources using airline availability information source specific codes.

157. The method according to claim 156, wherein the communicating step comprises:

measuring one or more response characteristics associated with the proxies;

prioritizing the proxies according to the response characteristics measurements; and

maintaining a proxy priority queue, whereby queries are passed to higher priority proxies.

158. The method according to claim 156, wherein the communicating step comprises:

identifying one or more airline availability information sources that proxies cannot communicate with; and

filtering out queries directed to the identified airline availability information sources.

159. The method according to claim 156, wherein the communicating step comprises:

monitoring an operational status of the proxies; and

optimizing use of the proxies based on the operational status of the proxies.

160. The method according to claim 156, further comprising simulating replies from the proxies.

161. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining;

proactively generating one or more queries independent of requestor queries, including generating background threads that pose queries that appear to come from requestors; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

162. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining;

proactively generating one or more queries independent of requestor queries, including filtering one or more queries out of proactive caching; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

163. The method according to claim 162, wherein the filtering step includes filtering out queries related to airline flights for which fares are not available.

164. The method according to claims 162, wherein the filtering step includes filtering out queries related to flights on unsupported carriers.

165. The method according to claims 162, wherein the filtering step includes filtering out queries related to flights that users are not expected to request.

166. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining;

proactively generating queries independent of requestor queries and assigning priority to the proactively generated queries according to a total number of available seats; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

167. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information;

providing information to the requestors in accordance with the determining;

proactively generating one or more queries independent of requestor queries, including proactively generating one or more queries to update cached airline availability information according to multiple priorities; and

sending the one or more proactively generated queries to an airline availability information source and caching information returned therefrom.

168. The method according to claim 167, wherein the proactively generating step comprises:

prioritizing the cached airline availability information according to departure times;

prioritizing the cached airline availability information according to one or more additional features; and

updating the cached airline availability information based on a combination of the priorities associated with the departure time and one or more additional features.

169. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

predicting an availability status based on prior observed variables, including prior availability information, wherein the predicting includes,

identifying one or more factors associated with availability status,

learning a relationship between historical values for the one or more factors and historical values for availability status,

generating a function according to the learned relationship, and

providing new values for the one or more factors to the function,

whereby the function outputs predicted values for availability status;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information,

cached information, and

predicted information; and

providing information to the requestors in accordance with the determining.

170. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

querying one or more airline availability information sources for airline availability information;

receiving the requested airline availability information from the one or more airline availability information sources;

caching the received airline availability information;

receiving queries from requestors for airline availability information;

separating a first requestor query into one or more sub-queries;

prioritizing the one or more first requestor sub-queries with respect to one another;

placing the one or more first requestor sub-queries in a query priority queue;

separating a second requestor query into one or more sub-queries;

prioritizing the one or more second requestor sub-queries with respect to one another;

placing the one or more second requestor sub-queries in the query priority queue, ordering the first requestor sub-queries with respect to the second requestor sub-queries according to associated times of receipt, resolving priority disputes between simultaneously received first and second requestor queries so that higher priority sub-queries of the first and second requestors are processed before lower priority sub-queries of the first and second requestors;

processing the queries in the query priority queue according to their associated priorities;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining.

171. A method of interfacing between one or more requestors and one or more airline availability information sources, comprising:

monitoring airline availability information traffic between an airline availability information source and one or more clients of the airline availability information source;

caching at least a portion of the monitored airline availability information traffic;

determining a likelihood that information will be received within a period of time by the monitoring;

generating proactive queries for information not likely to be received within the period of time;

caching information returned in response to the proactive queries;

receiving a queries from requestors for airline availability information;

determining to provide the requestors with at least one of the following types of airline availability information,

real-time information, and

cached information; and

providing information to the requestors in accordance with the determining.

Appendix B

Evidence

- None -

Appendix C

Related Proceedings

- None -

Appendix D

Table of Authorities

Citation	Cited/Discussed
Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 65 USPQ2d 1385 (Fed. Cir. 2003)	Page 16
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